

## **Upper Platte River Basin**

When the Nebraska Ground Water Management and Protection Act, Nebraska Revised Statutes 46-701 through 46-753 (Reissue 2004) (the Ground Water Management Act) took effect on July 16, 2004, much of the land area in the Upper Platte River Basin (Basin), defined as the portion of the Platte River Basin upstream of the confluence of the Loup River with the Platte River, became fully appropriated by operation of law. That occurred because Section 46-720 provided for an immediate transition from the “joint action” planning processes that were initiated under previous law to the new integrated management planning process that is authorized by the Ground Water Management Act. All of the land area in the North Platte Natural Resources District (except for the Pumpkin Creek subarea) became fully appropriated, final determination, in that manner and on that date. Three other Natural Resources Districts (NRDs), the South Platte NRD, the Twin Platte NRD and the Central Platte NRD became fully appropriated, preliminary determination, on that same date, July 16, 2004. For those three NRDs, the Department of Natural Resources (Department) was required to hold public hearings before making final determinations. Following those hearings, the Department issued an order on September 30, 2004, that specified in part as follows:

“The portions of each of the Platte River Basin upstream of the Loup River Confluence, the North Platte River Basin and the South Platte River Basin that are within each of the South Platte Natural Resources District, the Twin Platte Natural Resources District and the Central Platte Natural Resources District are hereby determined to be fully appropriated, final determination.”

In that same order, the Department also determined:

“The geographic area within which the Department has determined ground water to be hydrologically connected to the surface water for the purposes of the final fully appropriated determination includes the entire geographic area of the South Platte Natural Resources District, the Twin Platte Natural Resources District, and the Central Platte Natural Resources District.”

The determinations made in the September 30, 2004 order were based on an assessment of the extant water supplies and water uses in the Basin, but only land area that was in one of the NRDs named above could then be determined as fully appropriated. Section 46-720 did not allow any other parts of the Basin to be determined as fully appropriated at that time, nor could land outside of those NRDs then be considered as hydrologically connected to the Platte River or its tributaries.

Also relevant to the evaluation being made in this report is the September 15, 2004 Department designation of all of the Platte River Basin upstream of the Kearney Canal diversion as “overappropriated.” That designation included the Platte River Basin portion of the Tri-Basin NRD upstream of that location. The geographic area where ground water and surface water were considered to be hydrologically connected for the purposes of that designation was also determined by that order and a portion of the Tri-Basin NRD was included in that determination.

As a result of the Ground Water Management Act and the September 15 and September 30, 2004 orders issued by the Department, most of the Basin was designated as fully appropriated and/or overappropriated prior to the issuance of this report. The most significant portions of the Basin that have not been so designated are the following: (1) the Platte River Basin portion of the Tri-Basin NRD east of Highway 183; (2) the Platte River Basin portion of the Little Blue NRD; and (3) the Platte River Basin portion of the Upper Big Blue NRD. Those previously omitted portions of the Basin have not been made subject to the Section 46-714 stays on new surface water permits or on expansion of surface water irrigated acres. Except for the areas subject to the July 16, September 15 and September 30, 2004 actions, determinations as to the geographic areas within which ground water is hydrologically connected to the Basin’s surface water supply have not been and could not have been made prior to this report. Consequently, there have been no Section 46-714 stays on the construction of new wells or on the expansion of ground water irrigated acreage in those portions of the basin listed as (1), (2), and (3) above or in any additional areas where ground water and surface water are hydrologically connected for that part of the Basin. For those portions of the Basin and those hydrologically

connected areas, no integrated management plans are being developed in accordance with Sections 46-715 through 46-718. This 2005 report presents the first statutory opportunity to determine whether the previously omitted portions of the Basin and any additional hydrologically connected areas should be subjected to the same limitations on new uses and to the same planning requirements as the previously designated areas.

The extant water supplies and water uses of the Basin were evaluated by the Department prior to the issuance of the September 30, 2004 order and that evaluation provided the basis for the Department's conclusion at that time that the Basin is fully appropriated. For the purposes of this report, an evaluation of supplies and uses in that same portion of the Basin does not need to be repeated. Therefore, the Department preliminarily concludes in accordance with Section 46-713 that the following additional portions of the Basin are fully appropriated: (1) the Platte River Basin portion of the Tri-Basin NRD east of Highway 183; (2) the Platte River Basin portion of the Little Blue NRD; and (3) the Platte River Basin portion of the Upper Big Blue NRD.

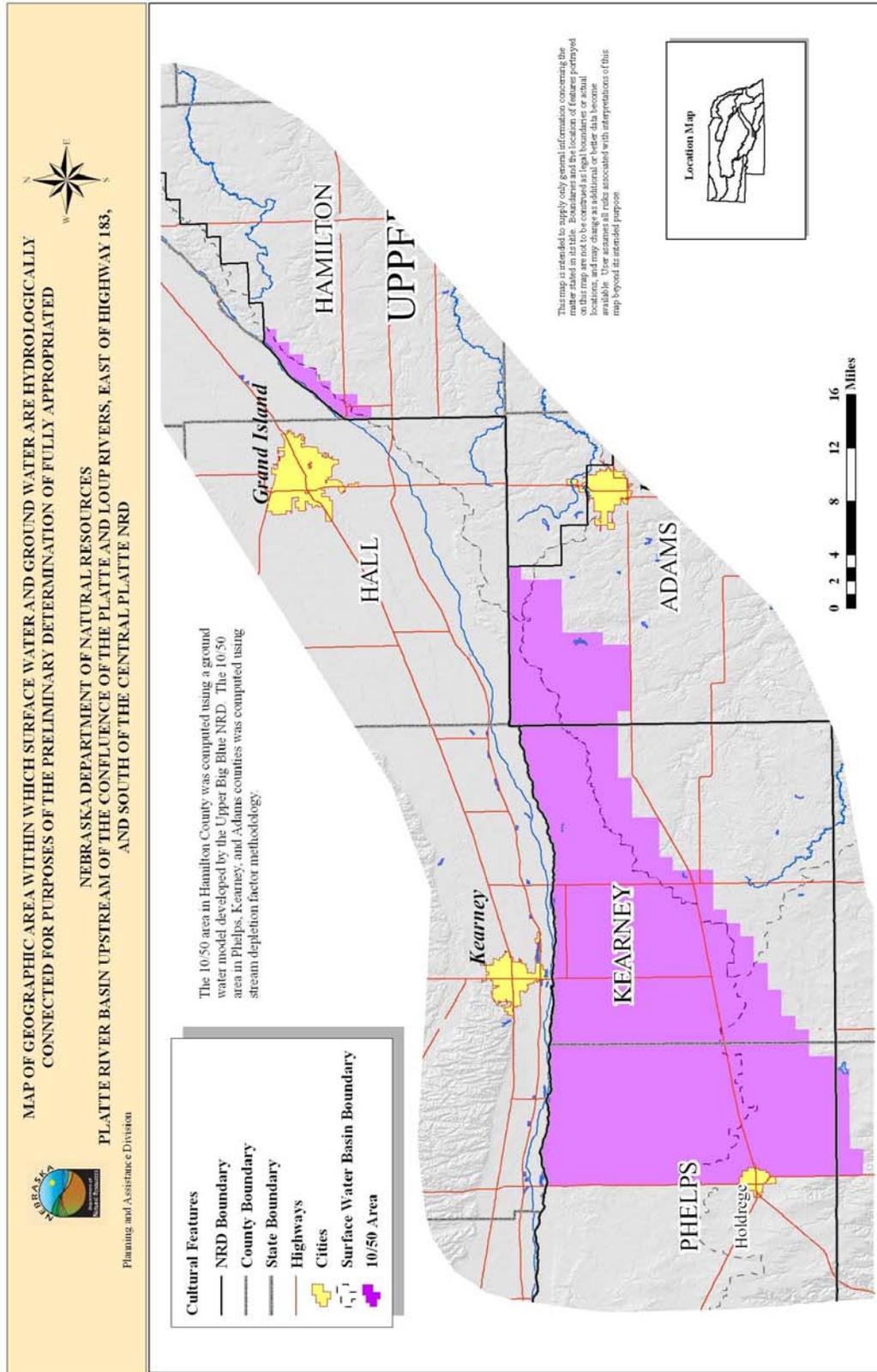
The September 30, 2004 order, however, did not provide the basis for determining, outside of the areas subject to that order, the extent to which ground water is hydrologically connected to Platte River Basin surface waters. For this report, the criteria used for that purpose is found in Department rule 457 Nebraska Administrative Code 24.001.02. That rule, which was filed with the Nebraska Secretary of State on August 31, 2005, provides as follows:

“001.02 The geographic area within which the Department preliminarily considers surface water and ground water to be hydrologically connected for the purpose prescribed in Section 46-713(3) is the area within which pumping of a well for 50 years will deplete the river or a base flow tributary thereof by at least 10% of the amount pumped in that time.”

For the portions of the Basin for which hydrologically connected determinations have not previously been made, the Department determined that using a combination of the Jenkins Stream Depletion Factor analysis, Cooperative Hydrology Study (COHYST) models and numeric groundwater models derived from the COHYST model would be the

best scientific method readily available to the Department to locate the 10% in 50 year line. A description of the Jenkins method is found in Appendix D and a description of the Upper Big Blue model which is based on the COHYST model is found in Appendix E. Based upon the results obtained from the use of these methods and in accordance with Section 46-713, the geographic areas shown on Figure UP-1 are preliminarily determined by the Department to be additional areas where ground water is hydrologically connected to those portions of the Basin that were determined by the September 30, 2004 order to be fully appropriated and/or to those portions of the Basin that are preliminarily determined above to be fully appropriated.

Figure UP-1. Preliminary Hydrologically Connected Area, Upper Platte River Basin.



This page intentionally left blank.